

## REMARKS

The Examiner is thanked for the performance of a thorough search. By this amendment, the Specification has been amended, Claims 1-5, 12, 14, and 23 have been amended. Claims 26-39 are added. Hence, Claims 1-39 are pending in this application. The amendments to the claims and the new claims do not add any new matter to this application. Furthermore, the amendments to the claims were made to improve the readability and clarity of the claims and not for any reason related to patentability. All issues raised in the Office Action are addressed hereinafter.

New claims 26-32 correspond in scope to claims 2-8, but claims 26-32 depend from apparatus-type claim 24. New claims 33-39 correspond in scope to claims 2-8, but claims 26-32 depend from apparatus-type claim 25.

### I. RESPONSE TO REJECTIONS NOT BASED ON THE PRIOR ART

#### A. Section §101 Issues

Claim 23 is rejected under 35 U.S.C. § 101 as allegedly directed to non-statutory subject matter. Applicants disagree with the basis of the rejection; however, solely for the purposes of advancing prosecution and administrative efficiency, present Claim 23 recites a “computer-readable storage medium”.

In addition, paragraph [0064] of the Specification has been amended to clarify that the volatile and non-volatile media are storage media and not transmission media, and paragraph [0065] of the Specification is amended to delete “a carrier wave as described hereinafter”. Applicants believe the present claim satisfies 35 U.S.C. § 101 and fully overcomes the rejection. Reconsideration is respectfully requested.

### II. RESPONSE TO REJECTIONS BASED ON THE PRIOR ART

#### A. Claims 1-2, 6-8, 10-13, and 23-25—Sharma et al.

Claims 1-2, 6-8, 10-13, and 23-25 stand rejected under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent No. 6,754,716 to Sharma et al. (hereinafter “*Sharma*”). Applicants

disagree with the basis of the rejection; however, solely for the purposes of advancing prosecution and administrative efficiency, Claim 1, 2, 12, 23-25 have been amended.

Reconsideration is respectfully requested.

### CLAIM 1

Present claim 1 clarifies that the method features determining whether a particular **subsystem of a network element**, from which the instruction originates, is authorized. For example, a subsystem may be a Dynamic Host Configuration Protocol (DHCP) server, an Authentication, Authorization, Accounting (AAA) server or a Network Address Translator (NAT), as enumerated in present claim 2. Support is found in paragraph [0028] of the specification.

The Office Action states that step 604 of Figure 6 and column 3, lines 12-34 of *Sharma* anticipates this feature. This is incorrect. Step 604 of Figure 6 and column 3, lines 12-34 of *Sharma* describe restricting responses to ARP requests only to requests coming from **authorized network devices**, not **subsystems of a network element**, as recited in claim 1.

The difference is significant. For example, applicants' improvement enables a receiving switch to accept ARP table updates from an authorized DHCP server of a particular network device having a particular network address, but refuse updates that come from other processes of the same network device. As a result, a malicious user cannot create processes that send malicious or spurious ARP table updates; instead, only trusted internal subsystems of a network device can update an ARP table. In contrast, the approach of *Sharma* would refuse a request from an authorized DHCP server unless *Sharma* had information that the associated device was also authorized.

This imposes undesirable limitations. For example, assume that a user of a home-based network installs a broadband network access point, such as a DSL router, in the user's home. The DSL router contains a DHCP server that can assign IP addresses to the home user's laptop computer, based upon a pool of addresses allocated to the user's ISP. The ISP might be willing to allow the DHCP server of a newly deployed DSL router to make ARP

table updates to the ISP's core network switches. However, the ISP would not want other processes using the IP address of the DSL router to make such updates, because the home user is un-trusted and could have set up a malicious process that spoofs the IP address of the DSL router and attempts to make spurious updates. With the *Sharma* approach, updates from the DHCP server of the DSL router would be refused unless the home user somehow registered the DSL router to make it authorized. The claimed approach recognizes that the DHCP server subsystem should be treated as inherently trusted.

To anticipate under 35 U.S.C. § 102(e), a reference must show all elements, steps or limitations of a claim, arranged as in the claim. An anticipation rejection is unsupported or overcome if a reference is missing even one element, step or limitation. *See Connell v. Sears, Roebuck & Co.*, 722 F.2d 1542, 1548, 220 USPQ 193, 198 (Fed. Cir. 1983). Here, applicants have shown that *Sharma* lacks at least one feature recited in claim 1. Therefore, an anticipation rejection is unsupported. Reconsideration is respectfully requested.

#### **CLAIMS 23-25**

Independent Claims 23-25 also recite the above-quoted features, although Claims 23-25 are expressed in other formats. Claims 23-25 have all the features described above for Claim 1, and therefore Claims 23-25 are allowable over *Sharma* for the same reasons given above for Claim 1. Reconsideration is respectfully requested.

#### **CLAIMS 2, 6-8, 10-11**

Claims 2, 6-8, 10-11 depend from Claim 1, and include each of the above-quoted features by dependency. Thus, Claims 2, 6-8, 10-11 also lack at least one feature found in *Sharma*, and therefore *Sharma* does not anticipate Claims 2, 6-8, 10-11.

In addition, each of Claims 2, 6-8, 10-11 recites at least one feature that independently renders it patentable. For example, Claim 8 recites “**if the particular subsystem is not authorized**, then performing the steps of: determining whether a particular network address indicated by the instruction is contained in a set of one or more specified network addresses.” The Office Action contends that the quoted feature is found in *Sharma* column 5, lines 44

through column 6, line 10 and Figure 5, steps 502 and 504. These references describe comparing protocol addresses to authorized protocol address; however, such comparing is NOT dependent on determining that a particular subsystem is not authorized, as featured in Claim 1.

In addition Claim 8 recites the conditional feature, “if the particular network address is not contained in the set, then updating the ARP table based on the instruction.” The Office Action contends that the quoted feature is found in *Sharma* step 504 of Figure 5 and column 7, line 1-9. However, these references describe updating a table if the protocol address IS in a certain list, while Claim 8 features updating the table if the address is NOT in a list.

As another example, Claim 10 features “wherein the ARP table is updated only in response to instructions that are not ARP messages”. The Office Action states that lines 6-34 of column 3 of *Sharma* anticipates this feature. However, this *Sharma* reference describes restricting ARP requests from unauthorized devices, not that the ARP table is updated only in response to instructions that are **not** ARP messages. In addition, *Sharma* teaches away from this for this references describes ARP messages that are authorized.

Claim 11 features “determining whether the particular subsystem is a Hypertext Transfer Protocol (HTTP) server”. The Office Action states that lines 22-51 of column 4 of *Sharma* anticipate this feature. However, Applicants sees no reference whatsoever to HTTP in any way, and is unclear how this reference anticipates Claim 11. Reconsideration is respectfully requested.

## CLAIM 12

Even though Claim 12 does not depend from Claim 1, Claim 12 does include each of the features of Claim 1. Thus, Claim 12 also lacks at least one feature found in *Sharma*, and therefore *Sharma* does not anticipate Claim 12. In addition, Claim 12 recites at least one additional feature that renders it patentable.

Claim 12 features “determining whether a particular **network interface through which the instruction was received** is contained in a set of one or more specified network

interfaces”. The Office Action states that column 5, line 44 through column 6, line 10 of *Sharma* anticipates this feature. This is incorrect. The *Sharma* reference describes comparing protocol addresses, not network interfaces through which the instruction was received. In addition, the *Sharma* reference describes the process to determine whether an ARP request should be sent, not whether an ARP table should be updated.

Even if the separate features of Claim 12 could be found in *Sharma*, Claim 12 features a method where all of the following are determined in some cases: whether a particular network interface through which the instruction was received is contained in a set of one or more specified network interfaces, determining whether a particular network address indicated by the instruction is contained in a set of one or more specified network addresses and determining whether a particular subsystem is authorized. *Sharma* cannot be reasonably interpreted as anticipating a process with all these three features in the same method. Reconsideration is respectfully requested.

### **CLAIM 13**

Claim 13 depends from Claim 12, and includes each of the features of Claim 12 by dependency. Thus, Claim 13 also lack at least one feature found in *Sharma*, and therefore *Sharma* does not anticipate Claim 13. In addition, Claim 13 recites at least one feature that independently renders it patentable. Reconsideration is respectfully requested.

### **B. Claims 14-22—Massarani et al.**

Claims 14-22 are rejected under 35 U.S.C. § 102(e) as allegedly anticipated by U.S. Patent No. 6,393,484 B1 to Massarani (hereinafter “*Massarani*”). The rejection is respectfully traversed.

### **CLAIM 14**

Present claim 14 features “receiving a request to update the ARP table from a Dynamic Host Configuration Protocol (DHCP) in a DHCP message that indicates a network layer address and corresponding data layer address; in response to receiving the message, determining whether the network layer address is bound with a data link layer address in the

ARP table; and only if the network layer address is not bound with a data link layer address, then sending an instruction to update an ARP table”. The Office Action states steps 308 and 310 of Figure 3, step 416 of Figure 4 and lines 31-54 of column 5 of *Massarani* anticipate these features. This is incorrect.

In *Massarani*, the ARP table is updated in response to a machine recognizing the IP address as its own and replying so indicating. *Massarani* does not describe or suggest the use of a DHCP message requesting an update of the ARP table, as featured in claim 14. Reconsideration is respectfully requested.

### **CLAIMS 15-22**

Claims 15-22 depend from Claim 14, and include each of the above-quoted features by dependency. Thus, Claims 15-22 also lack at least one feature found in *Massarani*, and therefore *Massarani* does not anticipate Claims 15-22. In addition, each of Claims 15-22 recites at least one feature that independently renders it patentable. For example, Claim 17 features “receiving a particular DHCP message that requests an extension of a lease; and in response to receiving the particular DHCP message, sending an instruction to update the ARP table”. The Office Action contends that this feature is described in the abstract of *Massarani*. This is incorrect. The abstract describes a DHCP server revoking the IP lease if time has expired, but not the feature of requesting an extension and updating the ARP table. Reconsideration is respectfully requested.

### **C. Claims 3-5 and 9—*Sharma* in view of *Massarani***

Claims 3-5, and 9 are rejected under 35 U.S.C. § 103(a) as being unpatentable over *Sharma* in view of *Massarani*. The rejection is respectfully traversed.

Each of claims 3-5 and 9 depends directly or indirectly from claim 1 and therefore includes the features of claim 1 that distinguish claim 1 from *Sharma*. Claims 3-5 and 9 are patentable over a combination of *Sharma* and *Massarani* because *Massarani* does not cure the deficiencies of *Sharma* noted above. Thus, because *Sharma* is missing the above-referenced features, any combination of *Sharma* with *Massarani* does not provide the complete subject

matter that is recited in Claims 3-5 and 9. Accordingly, Claims 3-5 and 9 are allowable over a combination of *Sharma* and *Massarani*.

In addition, each of Claims 3-5 and 9 recites at least one feature that independently renders it patentable. For example, Claim 3 recites “wherein determining whether the particular system is authorized comprises determining whether a DHCP server is authorized”. The Applicants disagree that this feature is described in *Massarani*. *Massarani* describes a DHCP server participating in the updating of an ARP table. However, *Massarani* does not describe “determining whether a DHCP server is authorized,” as claimed. *Massarani* instead describes determining if a MAC address **of the device** needing an IP address is registered, **not the DHCP server**. *Massarani* does not cure the deficiencies of *Sharma*; thus, any combination of *Sharma* and *Massarani* does not provide the complete subject matter of claim 3.

Claims 4 and 5 respectively feature determining whether an AAA server or a NAT device is authorized. *Massarani* fails to describe either of these features. *Massarani* has no description of **determining whether an AAA server or NAT device is authorized**. The mere use of the terms “AAA” or “NAT” in *Massarani* does not anticipate the complete subject matter that is claimed.

Even assuming for the sake of argument that the proposed *Sharma-Massarani* combination is proper, the proposed *Sharma-Massarani* combination still fails to disclose, teach, or suggest the features recited in Claims 3-5 and 9. As a result, the proposed *Sharma-Massarani* combination does not establish a *prima facie* case of obviousness for claims 3-5 and 9.

Moreover, the Office Action has not properly demonstrated any teaching, suggestion, or motivation in *Sharma*, *Massarani*, or knowledge generally available to persons having ordinary skill in the art at the time of the invention to modify *Sharma*, *Massarani*, or the proposed *Sharma-Massarani* combination to make up for any of the deficiencies of *Sharma*, *Massarani*, and the proposed *Sharma-Massarani* combination noted above. The Office

Action merely states, “Therefore it would have been obvious to one ordinary skill in the art would at the time the invention was made to employ the teachings method of *Massarani* within *Sharma* method in order to enhance the security of the system” (Page 9 and 10 of the Office Action). Thus, the Office Action is entirely conclusory.

The question raised under 35 U.S.C. § 103(a) is whether the prior art taken as a whole would suggest the claimed invention taken as a whole to a person having ordinary skill in the art at the time of the invention. Accordingly, even if all elements of a claim are disclosed in various prior art references, which is certainly not the case here as discussed above, the claimed invention taken as a whole cannot be said to be obvious without some reason given in the prior art why a person having ordinary skill at the time of the invention would have been prompted to modify the teachings of a reference or combine the teachings of multiple references to arrive at the claimed invention.

The M.P.E.P. sets forth the strict legal standard for establishing a *prima facie* case of obviousness based on modification or combination of prior art references:

“To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references where combined) must teach or suggest all the claim limitations.”

M.P.E.P. ch. 2142 (Rev. 3, Aug. 2005). The teaching, suggestion, or motivation for the modification or combination and the reasonable expectation of success “must both be found in the prior art, and not based on applicant’s disclosure.” *Id.* (citations omitted). “Obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either explicitly or implicitly in the references themselves or in the knowledge generally available to one of ordinary skill in the art” at the time of the invention. M.P.E.P. ch. 2143.01



(Rev. 3, Aug. 2005). Even the fact that references *can* be modified or combined does not render the resulting modification or combination obvious unless the prior art teaches or suggests the desirability of the modification or combination. *See Id.* (citations omitted). Moreover, to “establish *prima facie* obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. All words in a claim must be considered in judging the patentability of that claim against the prior art.” M.P.E.P. ch. 2143.03 (Rev. 3, Aug. 2005) (citations omitted).

The governing Federal Circuit case law makes this strict legal standard even more clear.<sup>1</sup> According to the Federal Circuit, “a showing of a suggestion, teaching, or motivation to combine or modify prior art references is an essential component of an obviousness holding.” *In re Sang-Su Lee*, 277 F.3d 1338, 1343, 61 U.S.P.Q.2d 1430, 1433 (Fed. Cir. 2002) (quoting *Brown & Williamson Tobacco Corp. v. Philip Morris Inc.*, 229 F.3d 1120, 1124-25, 56 U.S.P.Q.2d 1456, 1459 (Fed. Cir. 2000)). “Evidence of a suggestion, teaching, or motivation . . . may flow from the prior art references themselves, the knowledge of one of ordinary skill in the art, or, in some cases, the nature of the problem to be solved.” *In re Dembiczak*, 175 F.3d 994, 999, 50 U.S.P.Q.2d 1614, 1617 (Fed. Cir. 1999). However, the “range of sources available . . . does not diminish the requirement for actual evidence.” *Id.* Although a prior device “may be capable of being modified to run the way the apparatus is claimed, there must be a suggestion or motivation in the reference to do so.” *In re Mills*, 916 F.2d at 682, 16 U.S.P.Q.2d at 1432; *see also In re Rouffet*, 149 F.3d 1350, 1357, 47 U.S.P.Q.2d 1453, 1457-58 (Fed. Cir. 1998) (holding a *prima facie* case of obviousness not made where the combination of the references taught every element of the claimed invention but did not provide a motivation to combine); *In Re Jones*, 958 F.2d 347, 351, 21 U.S.P.Q.2d 1941, 1944 (Fed. Cir. 1992) (“Conspicuously missing from this record is any evidence, other than the PTO’s speculation (if that can be called evidence) that one of ordinary skill in the

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<sup>1</sup> Note M.P.E.P. ch. 2145(X)(C) (Rev. 3, Aug. 2005) (“The Federal Circuit has produced a number of decisions overturning obviousness rejections due to a lack of suggestion in the prior art of the desirability of combining references.”).

herbicidal art would have been motivated to make the modification of the prior art salts necessary to arrive at” the claimed invention.). Even a determination that it would have been obvious to one of ordinary skill in the art at the time of the invention to try the proposed modification or combination is not sufficient to establish a *prima facie* case of obviousness. *See In re Fine*, 837 F.2d 1071, 1075, 5 U.S.P.Q.2d 1596, 1599 (Fed. Cir. 1988).

The M.P.E.P. and the Federal Circuit also repeatedly warn against using an applicant’s disclosure as a blueprint to reconstruct the claimed invention. For example, the M.P.E.P. states, “The tendency to resort to ‘hindsight’ based upon applicant’s disclosure is often difficult to avoid due to the very nature of the examination process. However, impermissible hindsight must be avoided and the legal conclusion must be reached on the basis of the facts gleaned from the prior art.” M.P.E.P. ch. 2142. (Rev. 3, Aug. 2005). The governing Federal Circuit cases are equally clear:

“A critical step in analyzing the patentability of claims pursuant to [35 U.S.C. § 103(a)] is casting the mind back to the time of invention, to consider the thinking of one of ordinary skill in the art, guided only by the prior art references and the then-accepted wisdom in the field. . . . Close adherence to this methodology is especially important in cases where the very ease with which the invention can be understood may prompt one “to fall victim to the insidious effect of a hindsight syndrome wherein that which only the invention taught is used against its teacher.”

*In re Kotzab*, 217 F.3d 1365, 1369, 55 U.S.P.Q.2d 1313, 1316 (Fed. Cir. 2000) (citations omitted). In *In re Kotzab*, the court noted that to prevent the use of hindsight based on the invention to defeat patentability of the invention, this court requires the examiner to show a motivation to combine the references that create the case of obviousness. *See id*; *see also*, e.g., *Grain Processing Corp. v. American Maize-Products*, 840 F.2d 902, 907, 5 U.S.P.Q.2d 1788, 1792 (Fed. Cir. 1988). Similarly, in *In re Dembiczak*, the Federal Circuit reversed a finding of obviousness by the Board, explaining that the required evidence of such a teaching,

suggestion, or motivation is essential to avoid impermissible hindsight reconstruction of an applicant's invention:

“Our case law makes clear that the best defense against the subtle but powerful attraction of hind-sight obviousness analysis is *rigorous application of the requirement for a showing of the teaching or motivation to combine prior art references*. Combining prior art references without evidence of such a suggestion, teaching, or motivation simply takes the inventor's disclosure as a blueprint for piecing together the prior art to defeat patentability—the essence of hindsight.”

175 F.3d at 999, 50 U.S.P.Q.2d at 1617 (emphasis added) (citations omitted).

Applicants respectfully submit that, for at least these reasons, the Examiner has not established a *prima facie* case of obviousness for Claims 3-5 and 9. Applicants respectfully request reconsideration and allowance of Claims 3-5 and 9.

### III. CONCLUSIONS & MISCELLANEOUS

For the reasons set forth above, all of the pending claims are now in condition for allowance. The Examiner is respectfully requested to contact the undersigned by telephone relating to any issue that would advance examination of the present application.

A petition for extension of time for one (1) month, and otherwise to the extent necessary to make this reply timely filed, is hereby made. If any applicable fee is missing or insufficient, throughout the pendency of this application, the Commissioner is hereby authorized to charge any applicable fees and to credit any overpayments to our Deposit Account No. 50-1302.

Respectfully submitted,

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